



6712-01

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 90

[PS Docket No. 09-19; RM-11514 and RM-11531; FCC 15-37]

Travelers' Information Stations

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: In this document, the Commission amends its rules pertaining to public safety Travelers' Information Stations (TIS), which Public Safety Pool-eligible entities operate to transmit noncommercial, travel-related information over AM band frequencies to motorists on a localized basis. One current TIS rule requires the filtering of audio frequencies transmitted over TIS. Specifically, the Commission relaxes the rule to require the filtering of audio frequencies above 5 kHz instead of 3 kHz. This rule change will enable TIS operators to improve the audio quality and intelligibility of TIS broadcasts, thus improving their ability to communicate clearly with the traveling public.

DATES: Effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

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SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Second

Report and Order in PS Docket No. 09-19; RM-11514 and RM-11531; adopted March 25, 2015 and released on March 26, 2015. The complete text of this document is available for inspection and copying during normal business hours in the FCC Reference Information Center, Portals II, 445 12th Street, SW., Room CY-A257, Washington, DC 20554. Alternative formats (computer diskette, large print, audio cassette, and Braille) are available to persons with disabilities or by sending an e-mail to FCC504@fcc.gov or calling the Consumer and Governmental Affairs Bureau at (202) 418-0530, TTY (202) 418-0432. This document is also available on the Commission's Web site at <http://www.fcc.gov>.

INTRODUCTION

Commission rules authorize Public Safety Pool-eligible entities to use Travelers' Information Stations (TIS) to transmit noncommercial, travel-related information over AM band frequencies to motorists on a localized basis. § 90.242(b)(8) of the Commission's rules requires the filtering of audio frequencies between 3 and 20 kHz. Based on a comment record indicating that this filtering decreases the audibility of TIS broadcasts in general, and especially at night and over difficult terrain, the Commission adopted a Further Notice of Proposed Rulemaking (FNPRM) concurrently with the Report and Order proposing elimination of the TIS filtering requirement. In comments to the FNPRM, the National Association of Broadcasters (NAB) proposed relaxing, but not eliminating, the filtering requirement from 3 kHz to 5 kHz. The Commission sought comment on this proposal. The subsequent record indicates that a relaxed filtering requirement could improve TIS audio quality to match that of AM broadcast stations, while still retaining a sufficient filtering requirement to minimize adjacent channel interference. Accordingly, in this proceeding we adopt a Second Report and Order that maintains a filtering requirement but relaxes it from 3 kHz to 5 kHz. We will also do the following: 1) require use of a new roll-off curve to maintain the required 50 dB attenuation at 20 kHz; 2) allow placement of

the filter ahead of the TIS transmitter in addition to current filter placement requirement and; 3) require certification only for newly manufactured equipment that implements these new rules.

BACKGROUND

The Commission established TIS in 1977 in order to “establish an efficient means of communicating certain kinds of information to travelers over low power radio transmitters licensed to Local Government entities.” The Commission specifically noted that such stations had been used to reduce traffic congestion and to transmit “road conditions, travel restrictions, and weather forecasts to motorists.” Further, the Commission anticipated that TIS also would be used to “transmit travel related emergency messages concerning natural disasters (e.g., forest fires, floods, etc.), traffic accidents and hazards, and related bulletins affecting the immediate welfare of citizens.”

Although the NPRM did not raise the issue of removal of the filtering provision of § 90.242(b)(8), numerous commenters supported it in the record. The FNPRM thus sought further comment on this issue in order to establish a more complete record. The NPRM received eleven comments (three from the American Association of Information Radio Operators (AAIRO)) and four reply comments (two from AAIRO). Because NAB proposed relaxing rather than eliminating this requirement in its comments, and AAIRO expressed accord with this compromise position in its own comments, the Commission sought further comment on this newly raised option in the Filtering PN.

SECOND REPORT AND ORDER

We now consider the record in this proceeding with respect the issues of relaxing or eliminating the filtering provision of § 90.242(b)(8), which requires the filtering of TIS audio frequencies above 3 kHz.

As noted, although the NPRM did not raise the issue, numerous commenters argued in

the docket for removal of the TIS filtering requirement. Commenters contended that this requirement decreases the audibility of TIS broadcasts in general, and especially at night and over difficult terrain. One commenter in particular, Burden, stated that he had conducted: “an experiment at the site of a TIS facility which had a first adjacent [AM broadcast station] audibly present but outside of its protected contour. I removed the 3 kHz filter opening the transmitted response to that of the 8 kHz program line. The result confirmed the intelligibility of the transmitted signal as considerably improved with no audible interference presented to the reception of the first adjacent.”

Burden continued that:

“AM broadcast bandwidth specified by the NRSC-2 Spectrum Mask adopted by the FCC some time ago to resolve interference issues, limits the audio frequency response of AM broadcast transmission to 10 kHz. Limiting the bandwidth of TIS transmission to the same bandwidth as the NRSC mask should be logical. A recent study into acceptable audio bandwidths conducted by NPR Labs in an AM-DAB study for the NRSC, concluded that limitations to an audio bandwidth less than 7 kHz was not advisable for AM broadcast facilities.”

Because this particular issue was not raised in the NPRM but rather was introduced by commenters in the record, the Commission sought further comment in the FNPRM on removing the filtering provision, asking whether there is any reason this restriction should not be removed. All commenters to the FNPRM, save two, supported elimination of the filtering requirement. In addition, many commenters, while supporting this elimination, opposed a mandate to “require filter removal for existing licensees.” According to AAIRO, “if the FCC were to mandate that all TIS licensees who wish to remove the filters must go through a new type acceptance/recertification, that requirement would present an undue financial burden [and t]he imposition of both the above requirements would likely cause most TIS Services to cease due to

expense and logistics.”

The Society of Broadcast Engineers (SBE) and NAB were the only commenters opposing removal of the TIS filtering restrictions. According to SBE “there is a significant potential for increased interference from this proposal.” SBE took particular issue with Burden’s claim that he “conducted an experiment removing the ‘3 kHz filter ... with no audible interference presented to the reception of the first adjacent,”” because “[t]he commenter’s anecdotal experiment lacked any demonstration of technical validity or proper scientific methodology.”

SBE also took issue with Burden’s claim that “‘limitations to an audio bandwidth less than 7 kHz was not advisable for AM broadcast facilities’ and ‘it only follows that the audio quality of the emergency message needs to be offered with the same intelligibility as that from AM radio broadcast facilities’” because “[w]hat these allegations fail to mention was that all the standards and studies cited were relative to AM full power broadcast stations.” SBE asserts that the findings of those studies “were not intended to be applied to TIS stations, which are licensed under very different standards and with a different allocation status.”

SBE further alleged that “many TIS stations fail to adhere to generally accepted modulation standards employed by AM broadcasters. ... SBE members have observed and reported that many TIS stations grossly over- or undermodulate their carriers resulting in poor audio quality and / or poor listenability. This is a ... supervening contributor to the poor audio quality that they attribute incorrectly to the audio filters.” While NAB shared many of SBE’s concerns, it also submitted “that a compromise approach may be workable.” Specifically, NAB stated that “a filter capable of filtering audio frequencies above 5 kHz should allow for a TIS signal of sufficiently higher quality, without impeding neighboring AM services.” NAB noted that “full-power AM radio stations routinely use 5 kHz filters to address and prevent interference among AM stations, with few significant problems.” Accordingly, NAB offered “a proposal to

allow TIS operators to use a 5 kHz filter, presuming TIS stations broadcast only voice content, as required under the Commission's rules."

AAIRO responded that it "can ... support the compromise proposed by the National Association of Broadcasters, ..." because "[t]he wider filter bandpass would markedly improve TIS voice transmissions and would also protect adjacent broadcasters should a TIS operator transmit non-voice material without authorization." AAIRO further stated that if:

a wider bandwidth filter may be substituted in place of the present 3-kHz filter ... the filter [should] be outboard to the TIS transmitter and immediately ahead of its audio input. The FCC should prescribe the exact formula for the audio filter and require its use by all TIS operations – new or existing – whose 3-kHz filters have been deactivated. AAIRO suggests the use of the same roll-off curve presently used in the 3-kHz filter, as it has proven to be adequate during the 30+ years of the TIS service's existence. The use of an outboard filter will streamline the timeline to improve the service and dramatically lower costs for existing operators who would otherwise be required to purchase new transmitters or have their present transmitters modified and recertified."

Because this compromise proposal was developed in the FNPRM comment record, the Bureau released the Filtering PN which not only sought comment on the issue of relaxation versus elimination of the TIS filtering requirement, but also whether, if the relaxation proposal were adopted, (1) revision of the related operational requirements would be required; (2) the rules regarding placement of the filter could be revised; (3) recertification would be required for such changes; and (4) relaxation of the filtering requirement (and the associated operational changes) should be mandatory or at the licensee's discretion. We address each of these issues, below.

Elimination versus Relaxation of the TIS Filtering Requirement

The filtering requirement limits the bandwidth of the TIS signal, thereby reducing the risk of interference to the reception of adjacent channel AM stations. However, the rule also has the effect of distinguishing TIS sonically from other AM stations, so that a motorist tuning her radio manually may know intuitively that she has tuned to a TIS station. Specifically, TIS stations have smaller audio bandwidth due to the 3-kHz filter than AM stations, so the audio fidelity of TIS is lower and less intelligible. Based on the record on this filtering issue that prompted us to adopt the FNPRM, and the record we have developed in response to the FNPRM, we find that the public interest benefits of this sonic distinction are minor at best, and that the public interest would be better served by allowing TIS to transmit more intelligible audio to ensure that motorists receive and understand travel-related information.

The Filtering PN first sought comment on whether the public interest was better served by relaxing the filter requirement from 3 kHz to 5 kHz or eliminating it as proposed in the FNPRM. Burden still calls for complete elimination based on his previously discussed experiment. All the other responding commenters support or would accept relaxation of the filtering requirement, although North Plainfield would prefer complete elimination of the requirement.

The record indicates that relaxation of the filtering requirement from 3 kHz to 5 kHz could improve TIS audio quality and intelligibility to match that of commercial AM broadcasting, while still minimizing adjacent channel interference. Even though Burden's experiment purported to demonstrate that a TIS station without a filter caused no audible adjacent channel interference to the reception of a first adjacent AM station outside its protected contour, we note that it was conducted at a single site and contains no information about the call signs, coordinates, power levels, or received signal strengths of the TIS or AM stations. Therefore, Burden's experiment provides us neither a sufficient pool of results nor sufficient data

to make a general conclusion that there would be no adjacent channel interference anywhere were we to entirely remove the TIS filtering requirements. Accordingly, in this Report and Order we adopt rules relaxing the minimum filtering requirement for TIS transmitters from 3 kHz to 5 kHz. We note, however, that licensees may continue to employ the 3-kHz requirement at their option.

Revision of Operational Requirements

The current TIS rule requires that at audio frequencies between 3 kHz and 20 kHz, the filter “shall have an attenuation greater than the attenuation at 1 kHz by at least: $60 \log_{10}(f/3)$ decibels, where ‘f’ is the audio frequency in kHz.” At audio frequencies above 20 kHz, the attenuation shall be at least 50 decibels greater than the attenuation at 1 kHz. This produces a roll-off curve that starts at 0 dB attenuation for 3 kHz, then increases attenuation to approximately 50 dB at 20 kHz. In its FNPRM comments, AAIRO suggested that the Commission should use “the same roll-off curve presently used in the 3-kHz filter” for a 5-kHz filter. However, if one slides this curve up in frequency to have 0 dB attenuation at 5 kHz but maintains the same slope, then the curve would attenuate signals only by 36 dB at 20 kHz. Accordingly, the Filtering PN sought comment on whether 36 dB attenuation at 20 kHz would be sufficient or whether the roll-off curve for a 5 kHz audio filter in a TIS system should have 50 dB attenuation at 20 kHz, consistent with the existing rule.

The Filtering PN also noted that a roll-off curve of $83 \log_{10}(f/5)$ decibels for frequencies between 5 kHz and 20 kHz would have 0 dB attenuation at the 5 kHz starting point, and would achieve 50 dB attenuation at 20 kHz. However, this is a steeper roll-off curve than the formula prescribed in the current rule. Accordingly the Filtering PN also sought comment on whether the Commission should impose this attenuation if the Commission decides to relax the filtering requirement from 3 kHz to 5 kHz. It also sought comment on whether affordable audio filters

exist in the marketplace that satisfy this roll-off curve; whether equipment manufacturers could retrofit existing filters or economically design, manufacture, and market such filters in the near term; and on the general availability of 5 kHz audio filters in the marketplace, the roll-off curves of specific models, and whether, alternatively, we should impose one of those roll-off curves in our rules.

In its Filtering PN comments, AAIRO states that although it “suggested previously that the same 3-kHz filtering formula could be employed for a 5-kHz filter for convenience of design ... if an alternate formula would provide superior protection to adjacent frequencies, it should be employed.” NAB too supports the Commission requiring the proposed new roll-off curve to achieve the required attenuation. No commenter opposed these proposed roll-off requirements for use with a 5-kHz filter. Moreover, these roll-off requirements are in the public interest because they provide similar interference protection to the reception of adjacent channel AM stations as existing 3 kHz filters based on the same 50 dB attenuation at 20 kHz. AAIRO states that “[s]tand-alone filters that comply with new rules for the TIS service can be built by TIS transmitter manufacturers, some of whom have already committed to stand-alone filter manufacture and to making those filters available to the market when new filtering rules are issued. The cost to manufacture a passive stand-alone filter is nominal.” We are persuaded that 5 kHz filters will be available for TIS at reasonable cost. Accordingly, we adopt these new operational requirements for 5 kHz filters in TIS systems.

Revision of the Filter Placement Requirements

The current rule requires that “[e]ach transmitter in a Travelers Information Station shall be equipped with an audio low-pass filter [that] shall be installed between the modulation limiter and the modulated stage.” However, as noted, in response to the FNPRM, AAIRO suggested that “the [replacement] filter [should] be outboard to the TIS transmitter and immediately ahead

of its audio input.” AAIRO further noted that “[t]he use of an outboard filter will streamline the timeline to improve the service and dramatically lower costs for existing operators who would otherwise be required to purchase new transmitters or have their present transmitters modified and recertified.” Accordingly, the Filtering PN sought comment on the feasibility of AAIRO’s suggestion and whether to require such configuration in our rules in the event the Commission were to relax the filtering requirement.

In its Filtering PN comments, AAIRO reiterates that the “least burdensome way for a willing licensee to make a filter change is to merely ‘turn off’ the existing 3-kHz TIS filter in the transmitter (which can be done by merely removing a single jumper on a circuit board) and to add a stand-alone 5-kHz filter ahead of the transmitter in the audio chain.” NAB states that the filter should still be installed between the modulation limiter and the modulated stage as required by the current rule. However, NAB also states that it could accept an alternative: audio processors that incorporate what it refers to as 5 kHz “brick wall” filtering, so long as those processors are commonly accepted and approved for the commercial AM broadcast service.

The current filter placement is at the last stage in the audio chain before modulation of the signal to radio frequencies (RF). The filter placement required in the rule ensures that any signal distortion introduced by the modulation limiter does not effectively increase the bandwidth of the audio signal before the modulation to RF. Based on AAIRO’s description of the filter placement, the filter is integrated onto a circuit board and cannot be replaced by a user. Placing a 5 kHz filter between the modulation limiter and the modulated stage, as NAB requests, would effectively require a circuit board replacement, which is essentially the whole TIS transmitter system. However, NAB’s alternative suggestion, an audio processor, would replace the modulation limiter and audio filter and thus would also require a circuit board replacement. The cost for TIS operators to replace a typical TIS transmitter would be \$18-23,000 for

equipment and installation. While either of NAB's proposals would reduce slightly the likelihood of harmful interference from TIS operations to broadcast stations in the AM band relative to an outboard filter, neither slight improvement would be significant enough to warrant the associated costs that would be imposed on TIS operators. Modulation limiters may have the potential to introduce some distortion into the signal after the signal has passed through an outboard 5 kHz filter, but given that the Commission will have certified all TIS transmitter models on the market for proper operation; that the 5-kHz filter we prescribe has a steeper roll-off curve than current 3-kHz filters, and that AM radio limits the upper modulating frequency to 5 kHz, we believe this likely to be of only minimal concern.

We revise our TIS rules to allow for a placement of the audio filter either ahead of the transmitter or between the modulation limiter and the modulated stage. This allows for either an outboard filter ahead of the transmitter circuit board before the board's modulation limiter, or a filter integrated into the transmitter circuit board in the present position after the modulation limiter. We expect our action will lead to improved audio quality at reasonable cost for TIS operators who wish to take advantage of the new rules and will not increase the potential for harmful interference. We therefore revise our rules to permit TIS operators to retrofit TIS equipment equipped with 3 kHz filters by placing the outboard 5 kHz audio filter at the transmitter audio input, and deactivate the 3 kHz filter, as AAIRO recommends. Similarly, we will allow manufacturers to manufacture, market, and sell already certified TIS systems that have been retrofitted accordingly. Alternatively, manufacturers may design new TIS systems where the 5 kHz audio filter is at the current placement between the modulation limiter and the modulated stage, or a system equipped with an audio processor that performs the filtering with the prescribed roll-off performance. However, to avoid imposing burdens on manufacturers, we do not require any redesigns of TIS equipment. We realize that interested manufacturers may

choose the first option out of cost considerations, as AAIRO observed in its comments to the Filtering PN. We discuss the FCC equipment certification of these permutations below.

Certification

Many FNPRM commenters who supported elimination of the filtering requirement also requested that no recertification requirement accompany such change. The Filtering PN sought comment on whether audio filter elimination/replacement and AAIRO's foregoing suggestion regarding filter placement would either: (1) constitute a change to TIS transmitters that requires recertification; (2) constitute a permissive change in certificated equipment that does not require recertification; or (3) be exempt from the Commission's equipment authorization rules.

No commenter spoke to the question of whether any of the foregoing changes, i.e., raising the minimum frequency for filtering a TIS transmitter from 3 to 5 kHz, the modification of the roll-off curve, and replacing the filter, would thereafter require recertification of the equipment under the Commission's rules. A retrofit to already certified equipment, i.e., the addition of an outboard 5 kHz filter at the audio input of equipment with "deactivated" 3 kHz filters, will require a Class II permissive change under § 2.1043(b)(2) of the Commission's rules, because the performance characteristics will be degraded from the time of the initial certification but will still meet the minimum requirements of the applicable rules. In this instance, manufacturers should file a Class II permissive change request with the Commission for each TIS model they seek to have retrofitted, and each permissive change filing should include a list of filters, if more than one to be approved with the system, and clear and concise instructions for TIS operators to perform the retrofit themselves. Grantees should make such instructions available to their customers and other interested TIS operators. Licensees interested in retrofitting existing equipment with 5 kHz filters must verify that their equipment model has received a Class II permissive change grant from the Commission and only use approved filters

for the system. Then, such licensees may retrofit the equipment per the manufacturer's instructions without further Commission authorization. Alternatively, if manufacturers design new TIS transmitters that contain 5 kHz audio filters between the modulation limiter and the modulated stage, that is, integrated into the circuit board, this will require a new Commission certification because this would effectively require a new design, which is essentially a whole new TIS transmitter system. Absent a dedicated 5 kHz filter, use of an audio processor to perform the 5 kHz filtering, including a digital audio player as AAIRO mentions, will require Commission certification to operate under § 90.242 to ensure that their output - independent of the input frequency content - satisfies the prescribed roll-off requirements.

Mandatory Nature of Change to Filtering Requirement

The Filtering PN also sought comment on whether, if the Commission either relaxes or eliminates the TIS filtering requirement, it should also require existing licensees to comply with the relaxed filtering parameters. According to AAIRO, the only commenter on this issue, the "change to new filtering requirements should be made optional to individual licensees rather than being mandated. Certainly, none are harmed, if a licensee determines that s/he will retain the present 3-kHz filter. Mandating the change for all current TIS operators would present a significant financial burden to governmental entities." We find AAIRO's arguments persuasive on this issue. Accordingly, we find that there is in fact no reason to mandate that all TIS licensees replace their 3 kHz filter since, if a licensee does not choose to relax its own TIS transmitter filtering parameters, there would be no change from the present, more stringent TIS filtering requirements. Manufacturers may also continue to manufacture, market, and sell already certified TIS systems, which have the 3 kHz filters "activated," as these systems are in compliance with both the existing filtering rule and the more relaxed rule we adopt today.

Music Content

Finally, SBE provided anecdotal reports of musical content over TIS and contends that “[w]hile most voice content is below 3 KHz, music expands that bandwidth.” However, AAIRO asserts that “[n]one of AAIRO’s nearly 400 members ‘broadcast musical content.’” NAB argues that music’s wider bandwidth “may not be adequately filtered by a 5 kHz filter and could cause harmful interference to neighboring AM radio services,” and “reiterate[s] that relaxing the TIS filtering requirement must be contingent on TIS stations’ strict compliance with 47 CFR 90.242(a)(7).” While we cannot take enforcement action at this time based on the limited evidence before us, we take this opportunity to remind licensees that only voice content is permitted per § 90.242(a)(7) of our rules, and that music content of any kind is not permitted.

PROCEDURAL MATTERS

Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980, see 5 U.S.C. 603, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) of the possible significant economic impact on small entities of the policies and rules addressed in this document. The FRFA is set forth in Appendix C of the Second Report and Order. The Commission’s Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of the Second Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA). See 5 U.S.C. 603(a).

Paperwork Reduction Act Analysis

This Second Report and Order does not contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Pub. L. 104-13. In addition, therefore, it does not contain any new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Pub. L. 107-198, see 44 U.S.C. 3506(c)(4).

ORDERING CLAUSES

Accordingly, IT IS ORDERED that pursuant to sections 4(i) and 303 of the Communications Act of 1934, as amended, 47 U.S.C. 154(i) and 303, that this Second Report and Order IS ADOPTED.

IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Second Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this Second Report and Order in a report to be sent to Congress and the General Accounting Office pursuant to the Congressional Review Act, see 5 U.S.C. 801(a)(1)(A).

List of Subjects in 47 CFR Part 90

Communications equipment; Radio.

FEDERAL COMMUNICATIONS COMMISSION.

Marlene H. Dortch,
Secretary.

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR part 90 as follows:

PART 90 – PRIVATE LAND MOBILE RADIO SERVICES

1. The authority citation for part 90 continues to read as follows:

AUTHORITY: Sections 4(i), 11, 303(g), 303(r), and 332(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 161, 303(g), 303(r), and 332(c)(7).

2. Section 90.242 is amended by revising paragraph (b)(8) to read as follows:

§ 90.242 Travelers' information stations.

* * * * *

(b) * * *

(8) Each transmitter in a Travelers' Information Station shall be equipped with an audio low-pass filter. Such filter shall be installed either at the transmitter's audio input or between the modulation limiter and the modulated stage. At audio frequencies between 5 kHz and 20 kHz this filter shall have an attenuation greater than the attenuation at 1 kHz by at least:

$83 \log_{10} (f/5)$ decibels.

where "f" is the audio frequency in kHz. At audio frequencies above 20 kHz, the attenuation shall be at least 50 decibels greater than the attenuation at 1 kHz.

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[FR Doc. 2015-10471 Filed: 5/4/2015 08:45 am; Publication Date: 5/5/2015]